Re Point III.

The search report was restricted to invention 1.

Re point IV.

The various inventions/groups of inventions are:

1, 2, 3 (dependent on 2), 4, 6 (dep. 4)
Production of a hole using a longer pulse length in a first process step than the pulse length in a later process step, with the laser pulse length being continuously increased.
1+3 (dependent on 1)
Production of a hole using a longer pulse length in a first process step than the pulse length in a later process step, with one of the laser pulse lengths being less than 100 ns.
1+4+5, 6 (dep. 5), 7, 8, 9 (dep. 5, 7 or 8)
Production of a hole using a longer pulse length in a first process step than the pulse length in a later process step in a layer system having a ceramic layer.
1+10, 11 (dep. 10), 12 (dep. 10)
Production of a hole in a component of a steam turbine using process steps with different pulse lengths.
1+11, 1+12
Production of a hole using a longer pulse length in a first process step than the pulse length in a later process step during the production of a new component or the refurbishment of a component.
1+13, 16-19
Production of a hole using process steps with pulses of different pulse lengths generated by at least two lasers.
1+14, 1+15
Production of a hole using a longer pulse length in a first process step than the pulse length in a later process step, with an outer upper region being produced in a first process step.

For the following reasons, these inventions/groups are not so linked as to form a single general inventive concept (PCT Rule 13.1):

Comments on lack of unity:

In the text which follows, instead of document WO 02/092276 (D1'), reference is made to EP 1 386 689 A (D1), since it has been published in one of the official languages and is regarded as translation of D1'.

EXPLANATIONS: D1 constitutes the prior art.

D1 discloses

a process for producing a hole (14) in a component (1) by means of pulsed laser beams (20), the process being carried out in a multiplicity of process steps (cf. paragraph [0051]), and shorter laser pulse lengths are in one of the first process steps than in one of the last process steps (cf. column 10, lines 10-14).

D1 also discloses (implicitly) the problem addressed by the applicant, namely that of "avoiding the use of ultrashort pulses", and therefore this problem is no longer suitable as a single general inventive concept.

INVENTION 1:
The following features (special technical features (stf), (PCT Rule 13.2)) can be regarded as a contribution to the prior art based on a comparison of the published prior art with the features of claims 1 + 2:
"continuously increased laser pulse length"

The following objective problem can be inferred from this:
"avoidance of cracks"

INVENTION 2:
The following features (special technical features (stf), (PCT Rule 13.2)) can be regarded as a contribution to the prior art, based on a comparison of the published prior art with the features of claims 1 + 3:
"production of a new component or refurbishment of a component"

The following objective problem can be inferred from this:
"Removal of the impurities or coating material"

INVENTION 3:
The following features (special technical features (stf), (PCT Rule 13.2)) can be regarded as a contribution to the prior art based on a comparison of the published prior art with the features of claims 1 + 4 + 5:
"ceramic layer"

The following objective problem can be inferred from this:
"avoidance of cracks during the formation of holes"

INVENTION 4:
The following features (special technical features (stf), (PCT Rule 13.2)) can be regarded as a contribution to the prior art based on a comparison of the published prior art with the features of claims 1 + 10:
"steam turbine"

The following objective problem can be inferred from this:
"efficient formation of holes"

INVENTION 5:
The following features (special technical features (stf), (PCT Rule 13.2)) can be regarded as a contribution to the prior art based on a comparison of the published prior art with the features of claims 1 + 11 and/or 12:
"production of a new component or refurbishment of a component"

The following objective problem can be inferred from this:
"removal of the impurities or the coating material which has been newly applied and has entered the holes"

INVENTION 6:
The following features (special technical features (stf), (PCT Rule 13.2)) can be regarded as a contribution to the prior art based on a comparison of the published prior art with the features of claims 1 + 13 and/or 16:

"pulses with different pulse lengths generated by two lasers"

The following objective problem can be inferred from this:

"avoiding changing the pulse length of the lasers"

INVENTION 7:
The following features (special technical features (stf), (PCT Rule 13.2)) can be regarded as a contribution to the prior art based on a comparison of the published prior art with the features of claims 1 + 14 and/or 1 + 15:
"production of an outer upper region in a first process step"

The following objective problem can be inferred from this:
"production of an accurate geometry of the holes"

The analysis provided above demonstrates that there is no technical relationship among the stf of the inventions involving one or more of the same or corresponding technical features. The conditions of PCT Rules 13.1 and 13.2 are therefore not satisfied, and therefore there is no unity of invention.

Furthermore, the 7 groups of claims are not connected by a single common technical stf and therefore define 7 different inventions.

The application relates to a large number of inventions or groups of inventions within the meaning of PCT Rule 13.1. These have been divided as described above. If the applicant pays additional fees for one (or more) group(s) of inventions which have not yet been searched at the current time, the additional search(es) could uncover further prior art which would demonstrate a further lack of unity "a posteriori" within one (or more) as yet unsearched group(s). In this case, only the first invention within (each) of this/these group(s) of inventions for which a lack of unity of invention has been established will become the subject of a search. There will be no further request for the payment of additional fees. The reason for this is that PCT Article 17(3) states that the International Searching Authority shall establish the international search report on those parts of the international application which relate to the invention first mentioned in the claims ("main invention") and on those parts of the international application which relate to the inventions in respect of which additional fees have been paid. Neither the PCT treaty nor the PCT guidelines give any legal basis for further requests for the payment of additional search fees (W17/00, point 11 and W1/97, points 11-16).

Re point V

1 The present opinion makes reference to the following documents:

D1: WO 02/092276 A (MORIYASU MASAHARU; ITO KENJI (JP); TAKENO SHOZUI (JP); KOBAYASHI NOBU) November 21, 2002 (2002-11-21)

D2: US 5 073 687 A (INAGAWA HIDEHO ET AL) December 17, 1991 (1991-12-17)

2 INDEPENDENT CLAIM 1

2.1 The present application does not meet the requirements of PCT Article 33(1), because the subject matter of claim 1 is not novel within the meaning of PCT Article 33(2). Document D1

discloses (the references in parenthesis relate to said document):

cf. the comments above with regard to point IV under "Explanations"

3 DEPENDENT CLAIMS 2, 3 (dependent on claim 2), 4, 6 (dep. 4)

3.1 The above claims do not contain any features which, in combination with the features of any claim to which they refer back, meet the PCT requirements for novelty (4 and 6 known from D1) and inventive step (2 known from D2 and 3 obvious possibility from which a person skilled in the art would choose in order to solve the problem of interest, without thereby being inventive).